

FIGURE 1

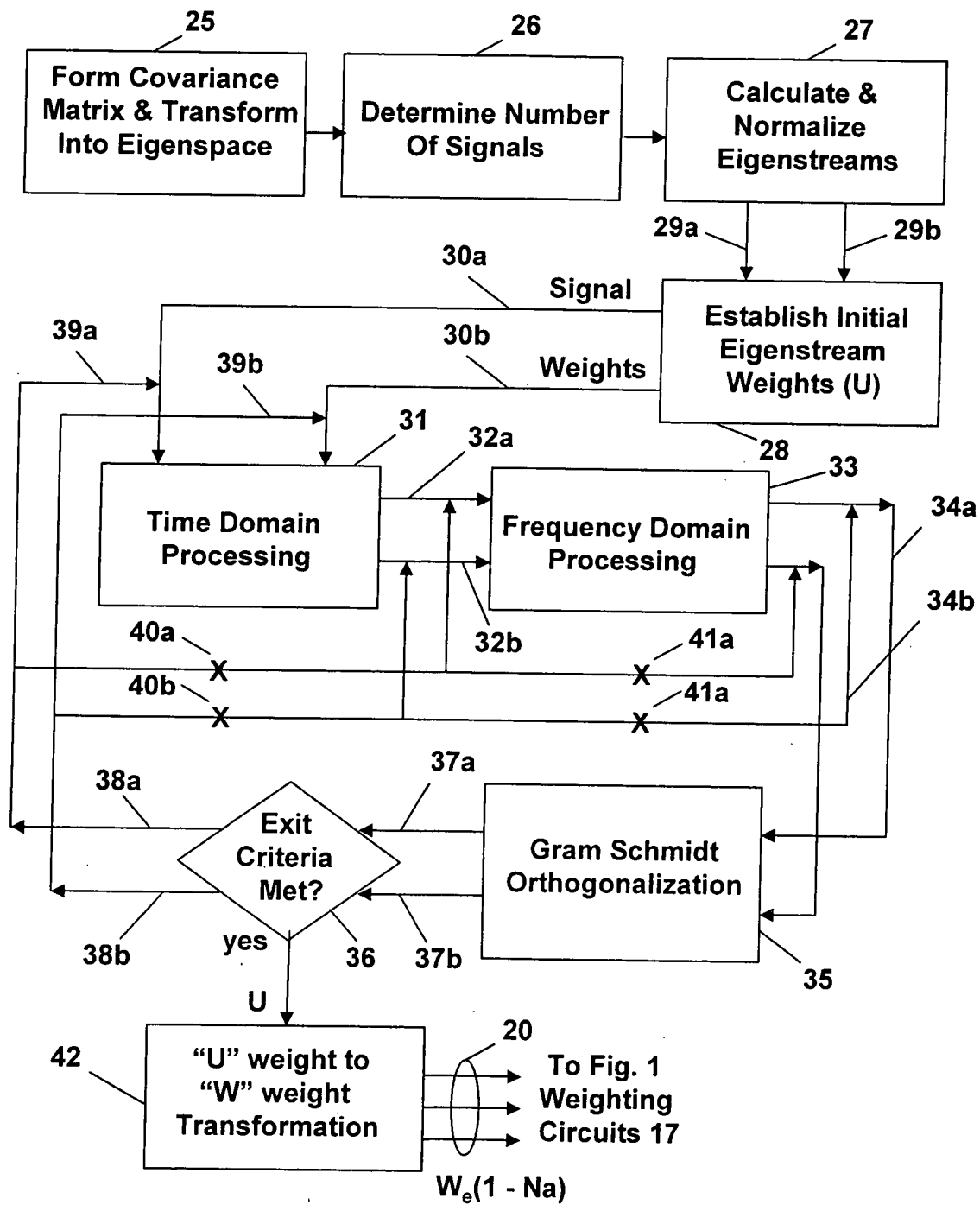


FIGURE 2

$$\begin{bmatrix} Q_{11} & Q_{12} & \bullet & \bullet & Q_{1Na} \\ Q_{21} & Q_{22} & \bullet & \bullet & Q_{2Na} \\ \bullet & \bullet & \bullet & \bullet & \\ \bullet & \bullet & \bullet & \bullet & \\ Q_{Na1} & Q_{Na2} & \bullet & \bullet & Q_{NaNa} \end{bmatrix} \begin{bmatrix} \lambda_{11} & 0 & \bullet & \bullet & 0 \\ 0 & \lambda_{22} & \bullet & \bullet & 0 \\ \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet \\ 0 & 0 & \bullet & \bullet & \lambda_{NaNa} \end{bmatrix} \begin{bmatrix} Q_{11}^* & Q_{12}^* & \bullet & \bullet & Q_{Na1}^* \\ Q_{21}^* & Q_{22}^* & \bullet & \bullet & Q_{Na2}^* \\ \bullet & \bullet & \bullet & \bullet & \\ \bullet & \bullet & \bullet & \bullet & \\ Q_{1Na}^* & Q_{2Na}^* & \bullet & \bullet & Q_{NaNa}^* \end{bmatrix} = R_{xx}$$

Eigenvector (Q) and Eigenvalue (λ) representation of the R_{xx} covariance matrix

FIGURE 3

$$\sum_{k=1}^{Nsigs} U^{new}(k, ns)^* \frac{1}{\sqrt{\lambda^{new}(k, k)}} Q_{rx}^{new}(1:Na, k)^* \approx \sum_{k=1}^{Nsigs} U^{old}(k, ns)^* \frac{1}{\sqrt{\lambda^{old}(k, k)}} Q_{rx}^{old}(1:Na, k)^*$$

FIGURE 5

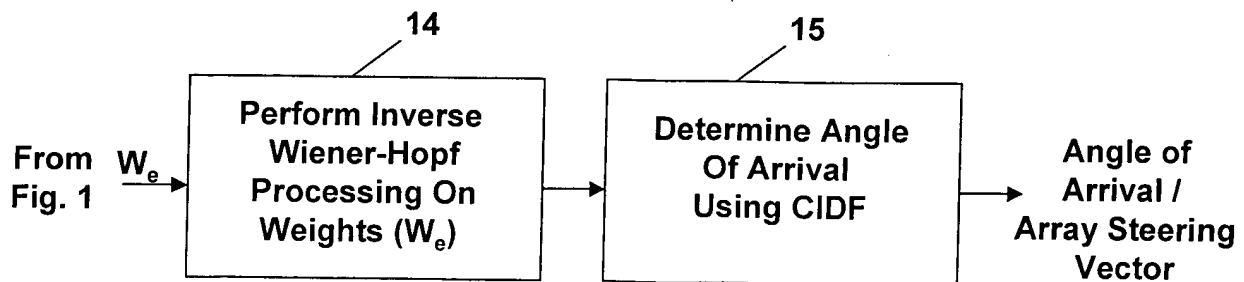


FIGURE 6

Copy / Capture Algorithm Flow

Step 1 (time domain)(Fig. 2, step 31)

CopyT = $U^T * \text{SteigsT}$

Zero out matrix Bt and establish a threshold T_{ht}

For each CopyT data stream [it = 1 : Nsp], on a time bin by time bin basis

if abs (CopyT(ns, it)) > threshold T_{ht} , then B(ns,it) = 1

YT(ns, it) = B(ns, it) x ([CopyT(ns, it)] / [|CopyT(ns, it)|])

End

U = SteigsT * Y^T

Updating the U matrix

U = Gram-Schmidt of U

Orthonormalizing the U matrix

Step 2 (frequency domain)(Fig. 2, step 33)

CopyF = $U^T * \text{SteigsF}$

Zero out matrix Bf and establish a threshold T_{hf}

For each CopyF data stream [if = 1: Nsp], on a time bin by time bin basis

if abs (CopyF(ns, if)) > threshold T_{hf} , then B(ns, if) = 1

YF(ns, if) = B(ns, if) x ([CopyF(ns, if)] / [|CopyF(ns, if)|])

End

U = SteigsF * Y^T

Updating the U matrix

U = Gram-Schmidt of U

Orthonormalizing the U matrix

Cycle through time domain step 1 and frequency domain step 2
until the U weighting matrix converges.

FIGURE 4

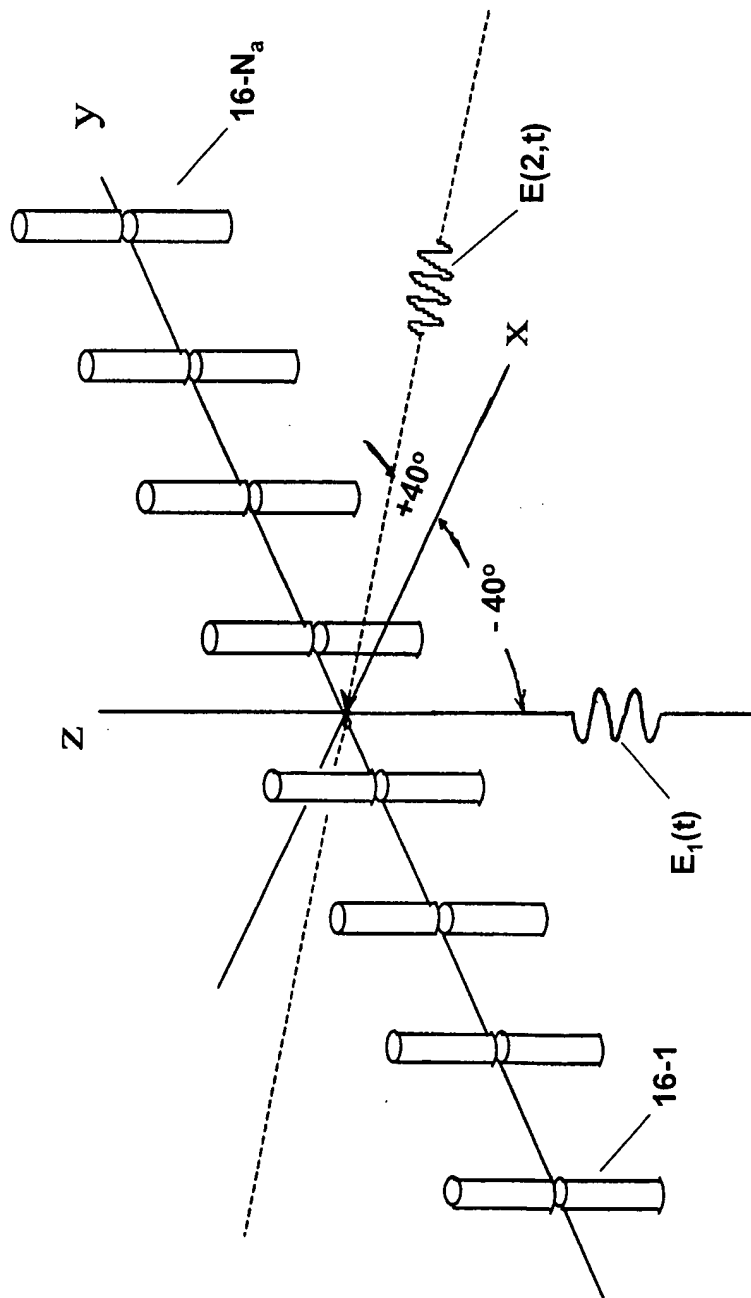


FIGURE 7

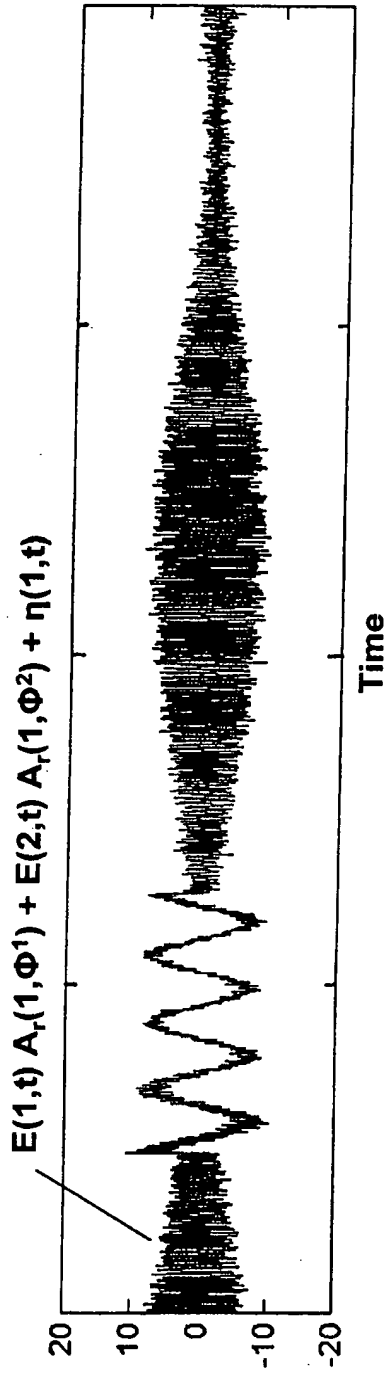


Fig. 8A

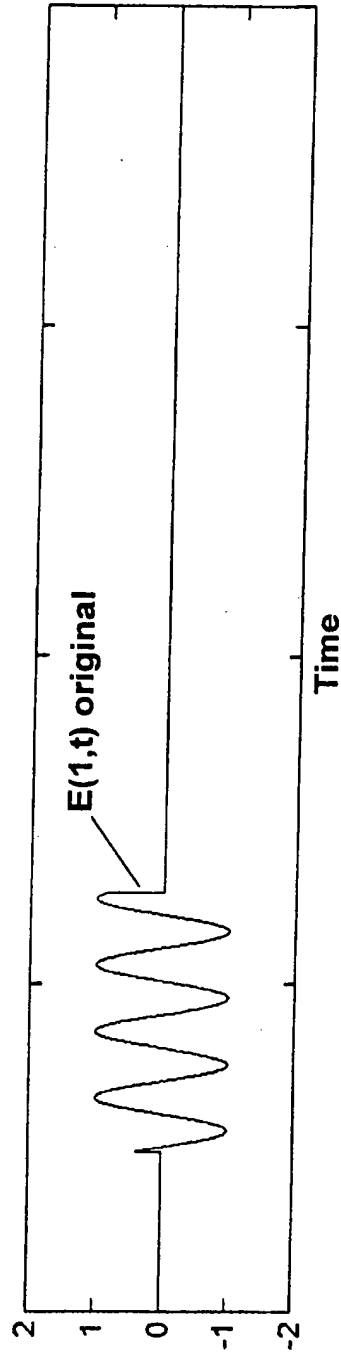


Fig. 8B

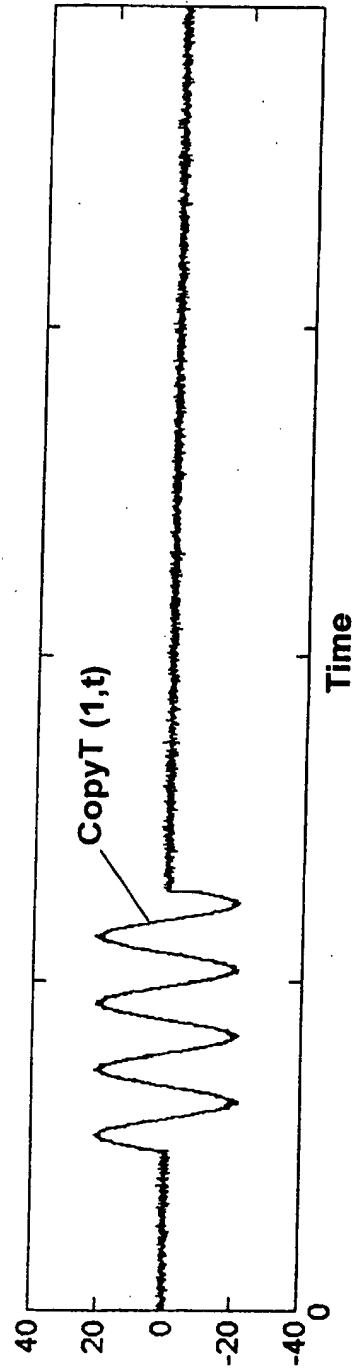


Fig. 8C

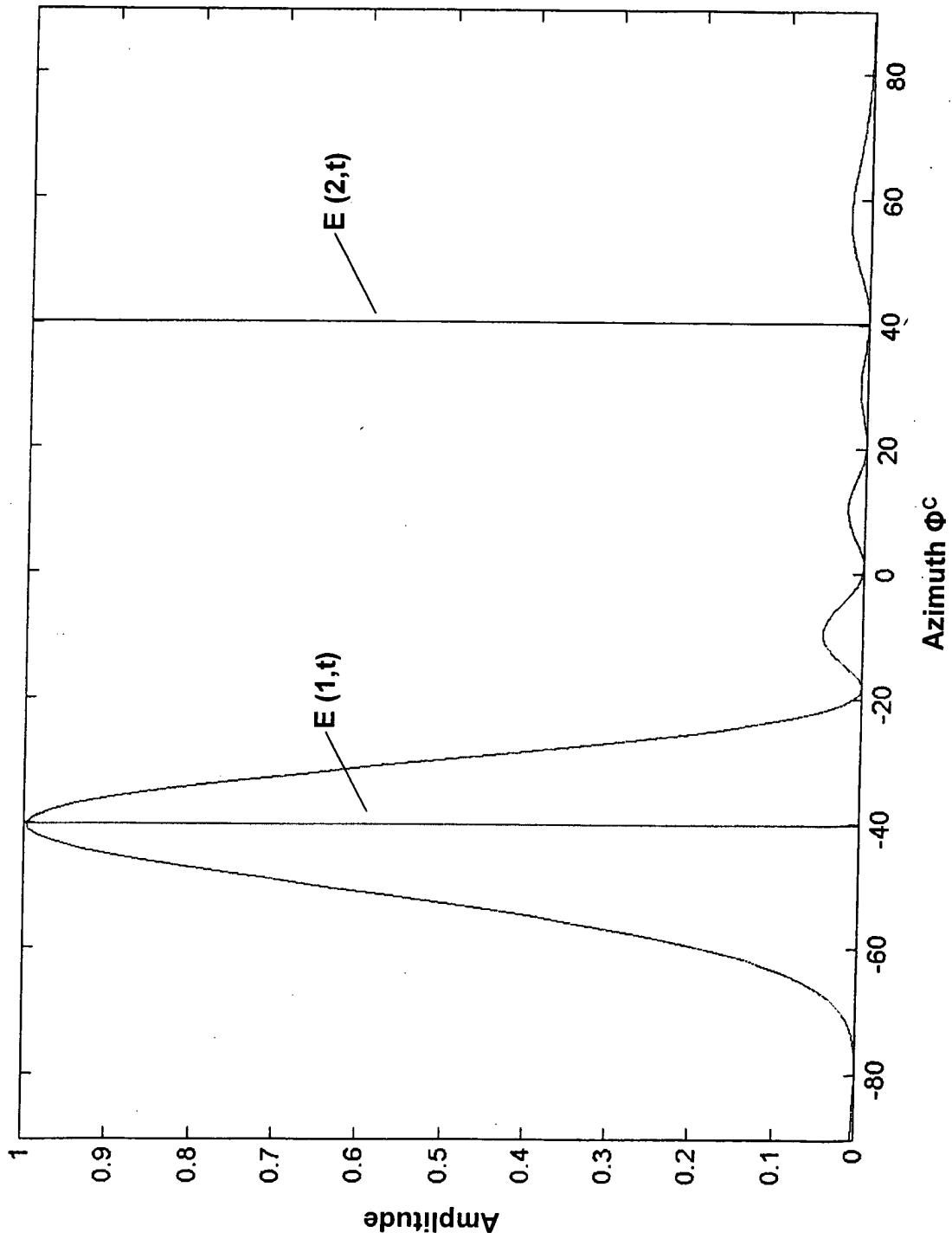
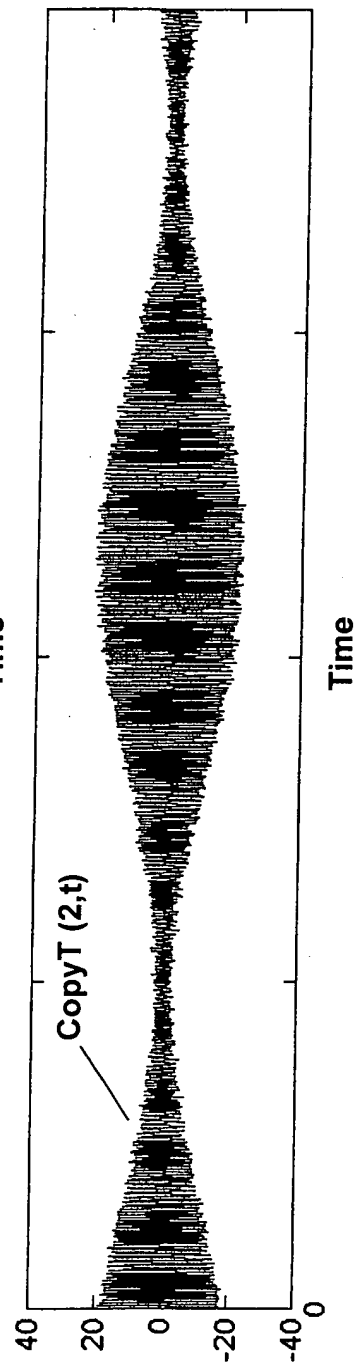
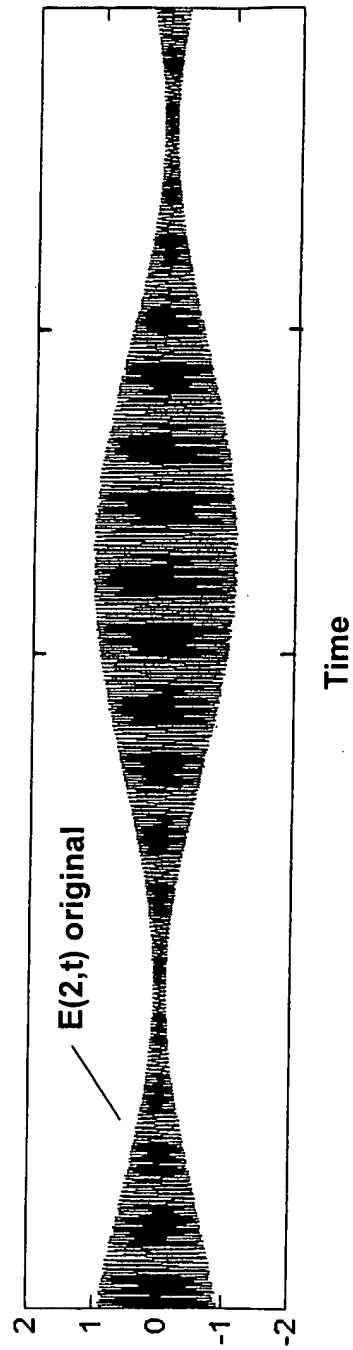
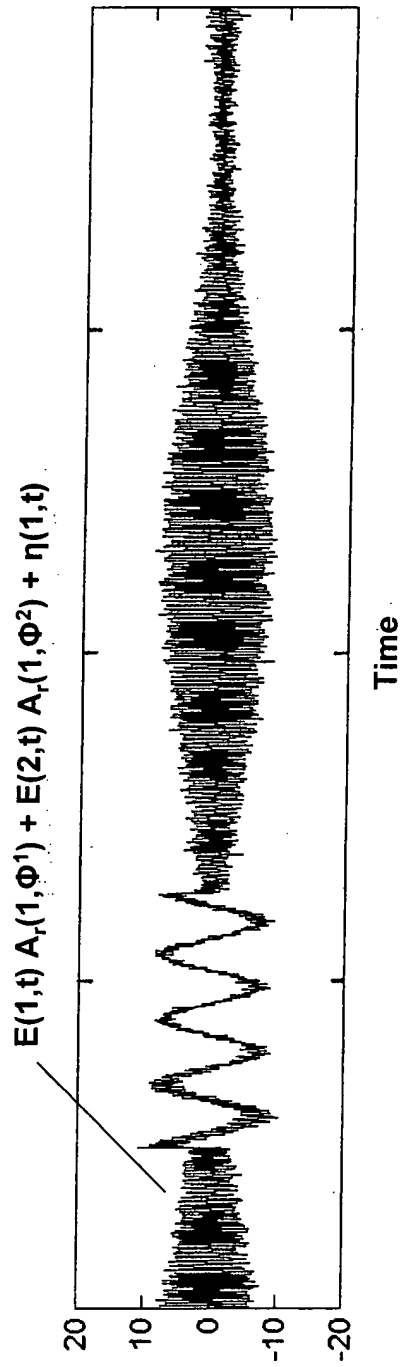


FIGURE 9



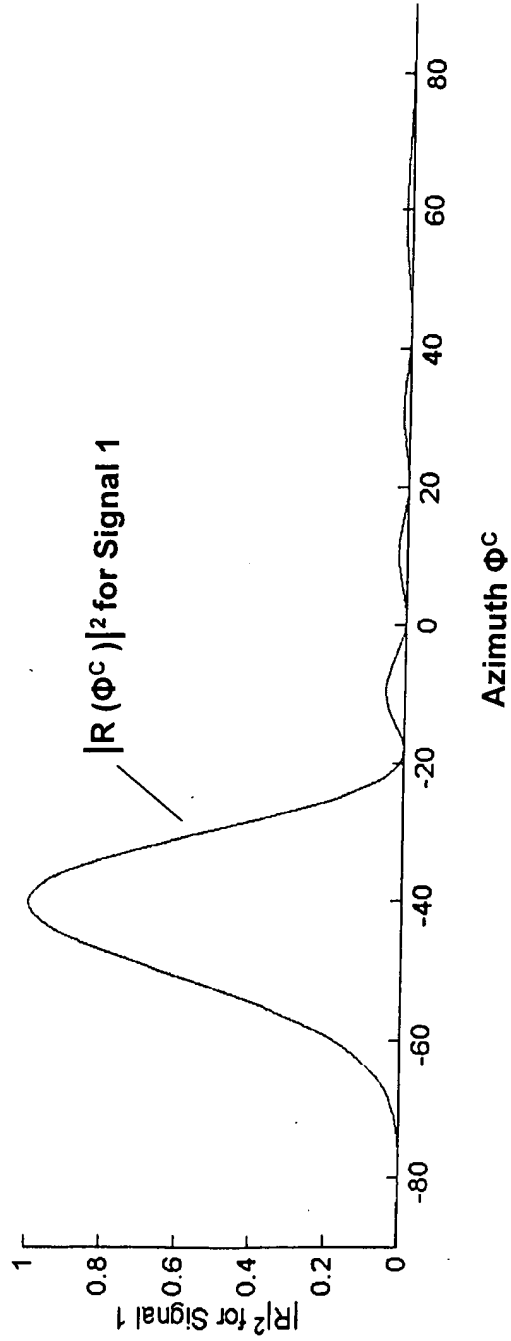


FIG. 11A

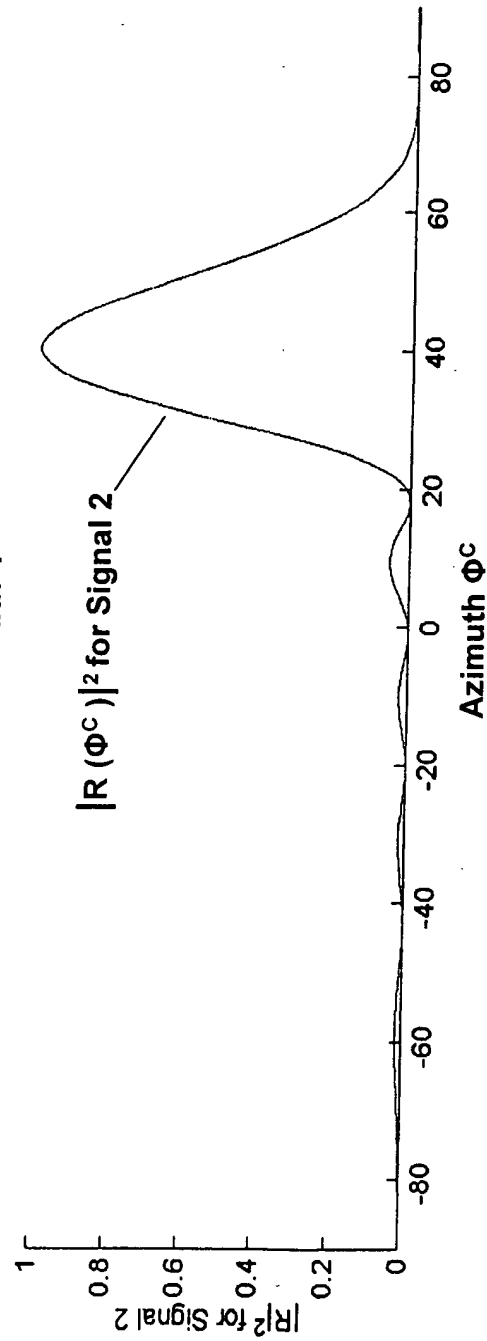


FIG. 11B